

NEW RECORDS AND SPECIES OF MILLIPEDS FROM THE
WESTERN UNITED STATES AND CANADA

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Dr. and Mrs. Herbert W. Levi and Mr. Joe Gorman collected the millipeds reported here and kindly made them available to me. Both collections are important because they contain several species previously known only from the type collections. Holotypes will be deposited in the American Museum of Natural History and paratypes will be retained in the author's collection.

ORDER COLOBOGNATHA

FAMILY ANDROGNATHIDAE

BRACHYCYBE PRODUCTA Loomis

Brachycybe producta Loomis, 1936. Proc. U. S. Nat. Museum, 83:367-368, fig. 32, h, i.

One female of 53 segments, width 3 mm., was collected by Mr. Gorman in Marin County, California, April 2, 1952.

ISCHNOCYBE PLICATA Cook and Loomis

Ischnocybe plicata Cook and Loomis, 1928. Proc. U. S. Nat. Museum, 72: 22-24, pl. 1, fig. 6.

One female of 57 segments was collected by Mr. Gorman at Genosee, Plumas County, California, April 13, 1952.

EUCYBE CLARUS Chamberlin

Eucybe clarus Chamberlin, 1941. Bull. Univ. Utah, Biol. Ser., 6(4):3.

One female of 58 segments, length about 20 mm., width 1.4 mm., agrees with the description of the female holotype except that there are three transverse rows of tubercles on the collum. Collected by the Levis at Patrick Creek, Del Norte County, California, July 4, 1951.

ORDER POLYDESMOIDEA

FAMILY XYSTODESMIDAE

HARPAPHE HAYDENIANA (Wood)

Polydesmus (Leptodesmus) haydenianus Wood, 1864. Proc. Acad. Nat. Sci. Philadelphia (1864):10; 1865, Trans. American Philos. Soc. 13:226-227, fig. 57.

Leptodesmus haydenianus (Wood), Bollman, 1893. Bull. 46, U. S. Nat. Museum, 122.

Harpaphe haydeniana (Wood), Cook, 1904. Harriman Alaska Exped., 8(1): 59-60, pl. 3, figs 4a, 4b, 4c.

A few adults and numerous larvae of stadium VII were collected by the Levis from moss and wet leaves along the shores of bodies of fresh water at Cape Perpetua, Lincoln County, Oregon, July 8, 1951.

HARPAPHE POTTERA Chamberlin

Harpaphe pottera Chamberlin, 1949. Proc. Biol. Soc. Washington, 63:129, fig. 10.

Several adult specimens were collected by Mr. Gorman at Low Pass Creek, March 25, 1951; on Brock Mt., April 16, 1952; and at Madison Creek, September 2, 1951, all in Shasta County, California. Prefemurs of legs with shorter spines than in *H. haydeniana*.

HYBAPHE TERSA Cook

(Figure 1)

Hybaphe tersa Cook, 1904. Harriman Alaska Exped. 8(1):58-59, pl. 3, fig. 3a.

Mr. Gorman collected specimens of both sexes April 16, 1932, at Low Pass Creek and on Brock Mt., both in Shasta County, California. The color is striking, with the prozonites green and the metazonites red-orange. The femoral branch of the male gonopods is flattened and easily bent. In each specimen the apex of the femoral branch is slightly different, varying from acute, as illustrated by Cook, to rounded (fig. 1) in some and finely bifid in two. Another interesting variation is seen in the keels of segments 2 through 4; in some specimens there is a small but distinct tooth on the anterior angle of each of these keels, while in others there is only a trace of the tooth on one or more of these keels. Keels of the collum sometimes have a similar small tooth. Dorsum moderately arched, with low-placed keels on all segments except the last. Keels of collum obtuse, lightly rounded; keels of segments 2 through 4 directed slightly cephalad, the caudal margins convex; keels of segments 5 through 16 rectangular, the caudal margins almost straight; keels of segments 17 through 19 increasingly reduced at the cephalic angles and produced at the caudal angle, with the eighteenth slightly acute and the nineteenth more acute and about half as large as the eighteenth. Prozonites of middle body segments much exposed. Caudal spine narrow, truncated. Legs from middle of body back with short, stout spine on the second article.

Tubaphe Causey, new genus

Telopodite of gonopods two-pronged, with both prongs simple as in *Hybaphe* Cook, 1904 and *Isaphe* Cook, 1904. Distinguished from both genera by the absence of keels on segments 6, 8, 11, and 14 and by the presence of only rudimentary keels on the poriferous segments. Coxae and prefemurs of legs spined, while in *Hybaphe* only the prefemurs are spined; leg spination unknown in *Isaphe*.

Genotype. Tubaphe levii Causey, new species.

Tubaphe levii Causey, new species

(Figures 2-4)

Male holotype. Colors faded, but the keels and perhaps the legs are red and the dorsum is brown. With the middle and posterior keels either absent or greatly reduced, the appearance is almost juloid. Keels of segments 1 through 4 are moderately large, obliquely depressed, with the angles rounded and the lateral margins welts. Beginning abruptly with the fifth segment and continuing on all of the poriferous segments, the keels are scarcely more than longitudinal welts through which the pores open laterad; there is but a slight trace of a welt on the nonporiferous segments (Fig. 2). Keels of segments 14 through 18 are slightly larger and produced caudad; on segment 19, of which very little is exposed, the keels are much reduced; apex of caudal spine narrow, truncated (Fig 3). Intrasegmental sutures distinct and lightly corrugated; tergites smooth otherwise. Prozonites of middle body segments much exposed. Sternites smooth and glabrous. Coxae of last legs well separated. Prefemurs of legs from middle of body back with stout, sharp spines and coxae with stout, blunt spines.

Telepodites of gonopods subparallel and contiguous at the femoral region, with the apices of the tibio-tarsi reaching in front of the sixth coxae. In lateral view each of the two prongs appears to form a semicircle; the curvature as seen in medio-cephalic view is shown in Figure 4; the curvature is altered by drying. Coxal region elongated, with the usual medial coxal hook; femoral region elongated and separated from the tibio-tarsus by an oblique suture. The long, attenuated femoral process arises from the medial surface and curves dorso-cephalad. *Width* 4 mm.

Female paratype. Somatic characters agree with those of the male except that the width is 5 mm. and the length is 33 mm.

Holotype, male: GRAVES CREEK CAMP GROUND, OLYMPIC NATIONAL FOREST, JEFFERSON COUNTY, WASHINGTON; rain forest. The Levis collected 1 male and 2 females July 12, 1951.

FAMILY NEARCTODESMIDAE

NEARCTODESMUS OLYMPUS Causey

Nearctodesmus olympus Causey, (in press). Ann Ent. Soc. America.

Several adults and larvae of stadium VII were collected by the Levis at Cape Perpetua, Lincoln County, Oregon, July 8, 1951. The apex of the lateral prefemoral branch of the gonopod bears three minute prongs instead of the four in the holotype from Callam County, Washington.

FAMILY POLYDESMIDAE

SCYTONOTUS AMANDUS (Chamberlin)

Polydesmus amandus Chamberlin, 1910. Ann. Ent. Soc. America, 3(4): 249-250; pl. 38, fig. 6; pl. 39, fig. 1.

Several adults and larvae of stadium VI were collected by the Levis from the Gros Verte area, Moose, Teton County, Wyoming, July 26, 1950.

Brachydesmus (Brachydesmus) yosemitensis Causey, new species
(Figure 5)

Distinguished from *B. hastingus* Chamberlin, 1941, the most closely related North American species, by the larger size and details of the gonopods. Gonopods especially distinctive in the irregularly serrated margin of the femoral lobe and the hooked lobe near the hair pad.

Male holotype. Color red-brown. Caudal margin of metatergites straight or slightly curved, with the caudal row of setae projecting beyond the margin. Keels finely dentate laterad, sometimes obscurely so, with five uneven serrations on the poriferous segments and four on the nonporiferous. Pores open laterad on longitudinal tubercles. Metazonites with three rows of low, setiferous, often indistinct tubercles, with 12 setae in each row. Transverse depressions between rows of tubercles are more distinct than the longitudinal depressions. Tubercles on keels tend to be indistinct. On most segments there are eight large tubercles in the anterior row, eight smaller ones in the middle row, and 12 little ones in the marginal row. Tubercles on eighteenth segment indistinct. Exposed parts of prozonites smooth; a raised transverse band separates the pro- and metazonites. Anal valves and venter with abundant short setae. Legs of segments 6, 7, and 10 unmodified, the other legs lost. Gonopods as shown in figure 5. *Width* 1.3 mm., estimated *length* 11 mm.

Holotype male: VERNAL FALLS, YOSEMITE NATIONAL PARK, CALIFORNIA. One male with the head, first five segments, and most of the legs lost was collected by Mr. Gorman February 2, 1952.

ORDER SPIROBOLOIDEA

FAMILY SPIROBOLIDAE

CALIFORNIBOLIS PONTIS Chamberlin

Californibolus pontis Chamberlin, 1949. Jour. Washington Acad. Sci., 39(5): 166, figs. 18, 19.

One male of 52 segments, width 5.2 mm., was collected by Mr. Gorman at Low Pass Creek, Shasta County, California, April 16, 1952.

CALIFORNIBOLIS UNCIGERUS (Wood)

Spirobolus uncigerus Wood, 1864. Proc. Acad. Nat. Sci. Philadelphia, (1864): 15; 1865, Trans. American Philos. Soc., 13:209-210, fig. 36.

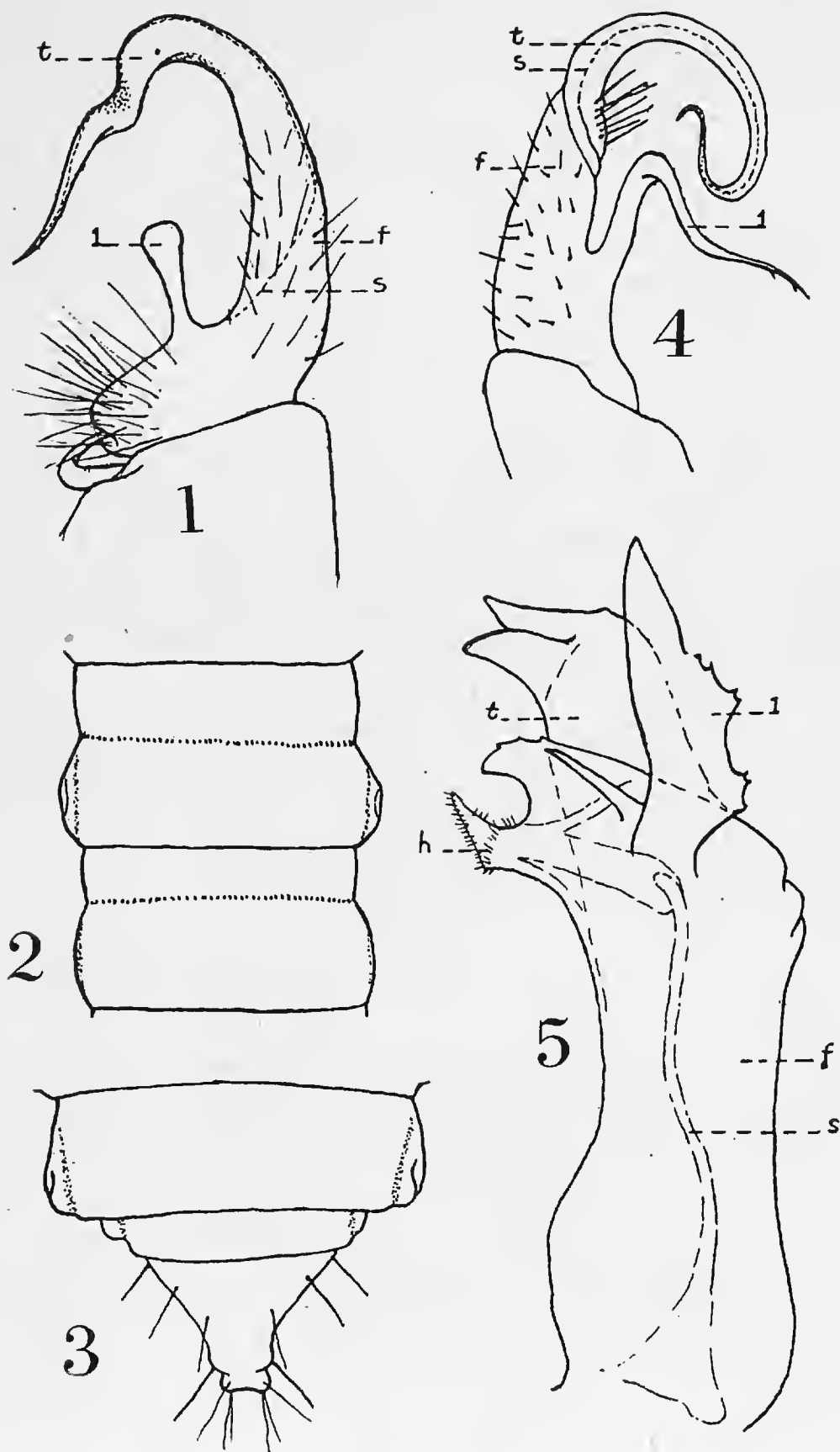
Tylobolus uncigerus (Wood). Cook, 1904. Harriman Alaska Exped. 8(1):67.

Californibolus uncigerus (Wood). Chamberlin, 1949. Jour. Washington Acad. Sci. 39(5):166.

EXPLANATION OF FIGURES

Hybaphe tersa Cook. Figure 1. Right gonopod, cephalic view.

Tubaphe levii Causey, new genus, new species. Figure 2. Segments 10



and 11, dorsal view. Figure 3. Segments 18-20, dorsal view. Figure 4. Left gonopod, medio-cephalic view.

Brachydesmus (B.) yosemitensis, Causey, new species. Figure 5. Left gonopod, lateral view.

f, femur; h, hair pad; l, femoral lobe; s, seminal canal; t, tibio-tarsus.

One male of 52 segments, width 6.4 mm., was collected by Mr. Gorman at Low Pass Creek, Shasta County, California, April 16, 1952.

AXOBOLUS ERGUS Chamberlin

Axobolus ergus Chamberlin, 1949. Jour Washington Acad. Sci., 39(5):163, figs. 5-7.

One male of 52 segments, width 6.3 mm., was collected by Mr. Gorman at Rich Bar, Plumas County, California, April 14, 1952.

ORDER JULOIDEA

FAMILY PARAIULIDAE

ORIULUS MEDIANUS Chamberlin

Oriulus medianus Chamberlin, 1940. Bull. Univ. Utah, Biol. Ser., 5(7):7-8, pl. 3, figs. 21, 22.

Several collections of adult specimens were taken by the Levis in Teton County, Wyoming, and Fremont County, Idaho, in June, July, and August, 1950. Only larvae were taken in Custer State Park, South Dakota, June 25, 1950.

TAIULUS TIGANUS (Chamberlin)

Paraiulus tiganus Chamberlin, 1910. Ann. Ent. Soc. America, 3(4):254-256, pl. 40, fig. 8; pl. 41, figs. 1-3.

Taiulus tiganus (Chamberlin). Chamberlin, 1940. Bull. Univ. Utah, 30(11):18.

Several adult specimens were collected by the Levis at Pines Camp Ground, Mt. Nebo, Juab County, Utah, August 25, 1951.

TAIULUS sp.

Numerous larvae were collected by the Levis from fern fronds in a rain forest at Cape Perpetua, Lincoln County, Oregon, July 8, 1951. Mr. Gorman collected larvae at Burney Falls, April 15, and mature females and larvae at Madison Creek, Shasta County, California, September 2, 1951.

FAMILY BLANIULIDAE

UTOIULUS UTUS (Chamberlin)

Nemasoma uta Chamberlin, 1912. Ann. Ent. Soc. America, 5(2):162-163.

Utoiulus utus (Chamberlin). Chamberlin, 1943. Proc. Biol. Soc. Washington, 56:145.

Nemasoma uta (Chamberlin). Chamberlin, 1951. Nat. Hist. Miscellany, No. 87, p. 9, fig 21.

Three collections, all males, were made by the Levis at Moran, Teton County, Wyoming, in July and August, 1950. Maximum length about 8 mm.

UTOIULUS LEECHI (Chamberlin)

Nemasoma leechi Chamberlin, 1951. Nat. Hist. Miscellany, No. 87, p. 10, fig. 20.

Several specimens were collected by the Levis from under rocks on a dry hillside, altitude 7100 feet, at Sunwapta Pass, Vaspar National Park, Alberta, Canada, August 10, 1951.

THE DORSAL HAIRLESS SETAL RING OF MOSQUITO PUPAE

(Diptera: Culicidae)

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The "dorsal hairless setal ring", as the name implies, resembles an alveolus of a bristle but lacks a projecting seta. In most mosquito pupae there is a pair of these structures on the dorsum of each of the abdominal segments III to V, usually in more or less close association with one of the regular bristles. In some forms the "setal ring" is lacking on segment III (*Wyeomia*) or segment V (subgenus *Rachisoura* of *Tripteroides*) and may be even completely absent (*Trichoprosopon*, *Sabethes*). This "setal ring" has usually been interpreted as a reduced bristle, and some workers have been of the opinion that, on segment II it is represented by a fully developed hair and that on the segments beyond V it has been completely lost (Baisas, 1938; Edwards, 1941; Penn, 1949; Darsie, 1949, 1951). Such an opinion appears to be supported by the fact that in the pupae of many common mosquitoes there is one more pair of fully developed hairs on the dorsum of segment II than on the following segments. On the other hand, the above mentioned workers did not study the chaetotaxy of the venter of the abdomen and it has been shown by Knight and Chamberlain (1948) beyond any doubt that the extra hair of the dorsum of segment II is actually one of the ventral hairs (10) which has moved dorsad in these forms while in several groups it has retained its primitive ventrolateral opposition (e.g. *Chagasia*, *Sabethes*, *Wyeomyia*, *Linatus*, *Topomyia*, *Harpagomyia*, *Tripteroides* [*Rachisoura*], *Culiseta*, *Ficalbia*, *Aedeomyia*, *Mansonia*, *Opifex*, *Deinocerites*). Accordingly Knight and Chamberlain assigned the designation O to the "dorsal hairless setal ring" and did not con-